

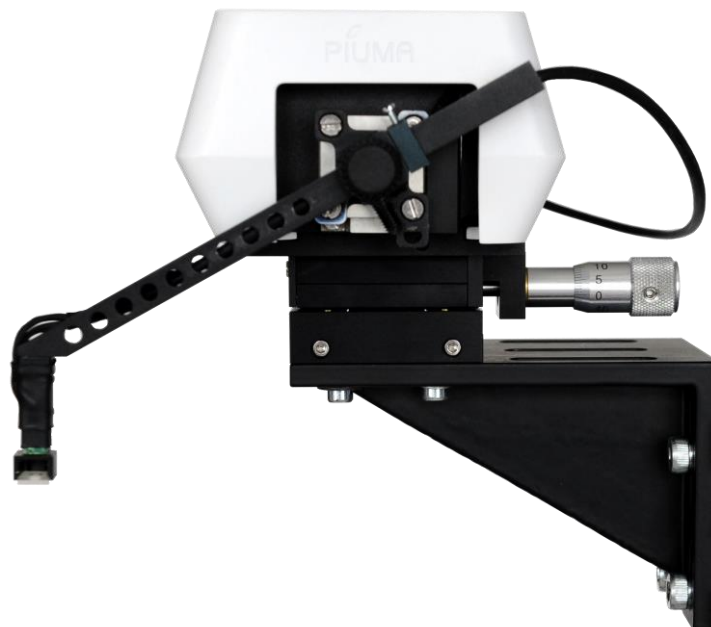
OPTICS11 CHIARO V3

Technology

The Optics11 Life Chiaro Nanoindenter is purposely built to explore soft materials down to cell-length scales, providing true insights in the mechanics of native and engineered materials. These unique capabilities are enabled by the Optics11 Life patented micro-machined fiber-optic sensors.

This indentation instrument uses the sensor to gently push a spherical glass tip on the surface of the sample. By closely monitoring the resulting sample deformation, the Chiaro Nanoindenter can rapidly provide all mechanical details of the indented spot.

In addition, all Optics11 Life probes are pre-calibrated making them plug-and-play design which streamlines experiments. This ensures fast measurements which is critical for time-sensitive biology-related experiments. Last, being small and portable yet powerful, the Chiaro nanoindenter will fit any lab.



Characterize mechanical properties of:

- Single cells
- Biological tissues
- Engineered tissues
- Spheroids
- Cell scaffolds
- Hydrogels
- 3D printed biomaterials
- Particles/capsules

Key features:

- Match with any inverted microscope or alternative setup
- Easy to learn and master
- Pre-calibrated probes
- Reliably measure even the softest samples
- Direct data & result output
- Customizable displacement/load/indentation profiles
- Micro-DMA (dynamic mechanical analysis) capability
- Automatic find-surface function
- Small footprint
- Little to no maintenance require



Technical specifications

Indentation capabilities

Probe force range	20 pN – 2 mN
Stiffness range	5 Pa – 1 GPa
Indentation stroke	Up to 100 μm @0.5 nm resolution
Tip size and geometry	3 μm – 250 μm , spherical
Contact size diameter	1 μm – 100 μm
Coarse X-Y stage travel	Closed-loop, 12 x 12 mm @80nm resolution
Coarse Z stage travel	Closed-loop, 12 mm
Minimum lateral pitch	0.2 μm
Compatible formats	All common dishes Well plates (up to 96 wells)
Minimum sample volume	>0.4 μL for 96-well plate (thickness 3 μm)
Indentation speed	Manual change between wells/sample dishes Automated mapping
Modes of interrogation	Quasi-static indentation (E , G) Step-response (Creep / Stress-Relaxation) Dynamic/oscillatory (DMA: E' , E'' , G' , G'') Adhesion mode
Frequency range	0.1 – 20 Hz
Control modes	Load/depth/piezo-displacement
Test environments	Air or liquid (water, culture medium)

Compatibility

Mounting	Breadboard
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